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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/620,544 | 07/21/2000 | Petro Estakhri | 38979-11CPA2 | 2400 |

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LAW OFFICES OF IMAM
111 N. MARKET STREET, SUITE 1010
SAN JOSE, CA 95113

EXAMINER

BRAGDON, REGINALD GLENWOOD

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2188

DATE MAILED: 06/30/2004

38

Please find below and/or attached an Office communication concerning this application or proceeding.

84

Office Action Summary

Application No.

09/620,544

Applicant(s)

ESTAKHRI ET AL.

Examiner

Reginald G. Bragdon

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 35.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. Documents A1-A157 (of the IDS filed 27 February 2004) have not been considered since the PTO-1449 does not identify U.S. Patents by inventor. See MPEP 609(III)(A)(1). Instead, it appears that the assignee is listed in the PTO-1449.
2. Documents B1-B45 (of the IDS filed 27 February 2004) have not been considered since the PTO-1449 does not identify the foreign patent or published foreign patent application by country or patent office with issued the patent or published application. See MPEP 609(III)(A)(1).

Furthermore, there does not appear to be a concise explanation of the relevance of the following documents not in the English language (see MPEP 609(III)(A)(3)):

B12, B16, B17, B19, B20, and B22.

Documents C16, C17, and C18 have been crossed off the PTO-1449 filed 27 February 2004 since these are the same documents cited in C12, C11, and C15, respectively.

Drawings

3. The drawings are objected to because in figure 15, it appears that LB5 in row 716 should be marked with a "1". See page 22, lines 13-15.
4. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended.

Art Unit: 2188

The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 3-17 are objected to because of the following informalities:

As per claim 3, line 11, --, said location-- should be added before “defined”.

As per claim 3, line 11, “said” before “one” should be deleted.

As per claim 3, line 12, “other than that being updated by the host command,” should be deleted.

As per claim 4, line 5, “is” should be --are--.

As per claim 5, line 2, “is” should be --are--.

As per claim 5, line 3, “particular block” should be --one or more blocks having previously-written sectors of data-- to correspond to lines 11-12 of claim 3.

As per claim 5, line 4, “new block” should be --one or more new blocks”.

Art Unit: 2188

As per claim 6, line 2, "particular block" should be --one or more blocks having previously-written sectors of data-- to correspond to lines 11-12 of claim 3.

As per claim 6, line 3, "is" should be --are--.

As per claim 6, line 3, "particular block" should be --one or more blocks having previously-written sectors of data-- to correspond to lines 11-12 of claim 3.

As per claim 7, line 11, --, said location-- should be added before "defined".

As per claim 7, line 11, "said" before "one" should be deleted.

As per claim 7, line 12, "other than that being updated by the host command," should be deleted.

As per claim 7, line 16, "sector" should be --sectors--.

As per claim 8, line 5, "is" should be --are--.

As per claim 9, line 2, "is" should be --are--.

As per claim 9, line 3, "particular block" should be --one or more blocks having previously-written sectors of data-- to correspond to lines 11-12 of claim 3.

As per claim 9, line 4, "new block" should be --one or more new blocks".

As per claim 10, line 2, "particular block" should be --one or more blocks having previously-written sectors of data-- to correspond to lines 11-12 of claim 3.

As per claim 10, line 3, "is" should be --are--.

As per claim 10, line 3, "particular block" should be --one or more blocks having previously-written sectors of data-- to correspond to lines 11-12 of claim 3.

As per claim 11, line 5, --, said location-- should be added before "defined".

Art Unit: 2188

As per claim 11, lines 6-7, "other than that being updated by the host command" should be deleted.

As per claim 12, line 4, "is" should be --are--.

As per claim 13, line 2, "sector" should be --sectors--.

As per claim 15, line 12, "sector" should be --sectors--.

As per claim 15, line 15, --a-- should be added after "by".

As per claim 15, line 16, "the particular sector" should be --the first sector--.

As per claim 15, line 17, "the particular block" should be --the one or more new blocks--.

This corresponds to figure 15 or 18.

As per claim 16, line 14, delete the comma (" , ") after "if".

As per claim 17, line 13, delete the comma (" , ") after "if".

All dependent claims are objected to as having the same deficiencies as the claims they depend from.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2188

7. Claims 2-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasbun et al. (5,586,285).

As per claims 2, 3, 7, 11, and 15-17, Hasbun et al. teaches, with reference to figures 1 and 2, a host CPU 52, a solid state disk controller 64 (“controller”), and a FLASH memory array 62 (“nonvolatile memory storage”) made up of a plurality of blocks, each comprised of a plurality of sectors (see figure 1; column 2, lines 39-42; and column 16, lines 62-64). Each sector of data within a block is identified by a logical sector number, or LSN. See column 5, lines 10-15.

Hasbun et al. teaches the logical address information locating a particular block and sector within the block, but calls the address information a logical sector number (LSN) instead of a logical block number (where Applicant’s LBN is disclosed as identifying a particular block and a particular sector within the block). In Hasbun et al. a LSN is input into a sector header translation table (SHTT) (see figure 4), which outputs a 16 bit physical address consisting of a chip number, block number, and header pointer. See figure 4. The header pointer is used to identify a particular header within the block identified by the output block number, where the header includes a block sector offset (BSO), which points to the start of data (i.e. the physical sector address in the memory) associated with a particular LSN (see column 6, lines 11-23). See also column 9, lines 26-45.

Therefore, each block is identified by a group of logical sector numbers corresponding to the predetermined sectors located within the block, where the logical sector number of Hasbun et al. correspond to the logical block number of Applicant’s invention (see the discussion in the previous paragraph).

With reference to figure 9, for a write operation received from the host to write a sector (“one or more sectors”) to the FLASH memory array, the updated sector is written (step 256) to another block (selected by an allocate free physical memory operation, step 250). No other sectors stored in the old block are moved, and the header information for the updated block is modified, as is the sector header translation table to point to the most recent version of the sector data associated with the sector number (where the sector number is the logical sector identifier received from CPU 52, which the CPU 52 believes corresponds to a physical sector; see column 5, lines 13-15) (step 258). Therefore, Hasbun et al. teaches only writing the updated sector without moving the remaining sectors as described in column 16, line 59, to column 17, line 7.

The system updates the SHTT such that the input sector number from the CPU is associated with the new physical location of the most recent version of the data, i.e. the same sector number is used to point to the most recent version of the data for each sector moved (“caused to be identified by said group of logical block addresses”), just the physical address changes in the SHTT. See column 17, lines 17-20

As per claims 4, 8, 12, and 15-17, further write commands to further sectors would result in the process described in figure 9 of Hasbun et al. being repeated.

As per claims 5-6, 9-10, and 13-14, previous sector information will be moved at a later time, such as when the previous sector information is erased during a clean-up operation. See figure 17

Response to Arguments

8. Applicant's arguments filed 10 May 2004 have been fully considered but they are not persuasive.

Applicant argues on page 8 that the logical sector number (LSN) of Hasbun et al. identifies a sector and not "one or more blocks" as set forth in the claims (which given its broadest reasonable interpretation "one or more blocks" is "one block"). However, the LSN of Hasbun et al. identifies particular block. First, it is noted that Applicant's disclosed "logical block address" doesn't identify only a block, but also a particular sector within the block. For example, with reference to page 16, lines 8-11, LBA '00' identifies sector 0 in a first block, LBA '15' identifies sector 15 within the first block, LBA '16' identifies sector 0 in a second block, and LBA '31' identifies sector 15 in the second block. It is noted that Applicant has not disclosed a separate logical sector number identifying a particular sector within a block. Therefore, Applicant's LBA locates a particular sector within a particular block, not just a particular block

Hasbun et al. teaches the logical address information locating a particular block and sector, but calls the address information a logical sector number (LSN) instead of a logical block number. In Hasbun et al. a LSN is input into a sector header translation table (SHTT) (see figure 4), which outputs a 16 bit physical address consisting of a chip number, block number, and header pointer. See figure 4. The header pointer is used to identify a particular header within the block identified by the output block number, where the header includes a block sector offset (BSO), which points to the start of data (i.e. the physical sector address in the memory) associated with a particular LSN (see column 6, lines 11-23). See also column 9, lines 26-45.

With respect to Applicant's arguments that Hasbun et al. doesn't teach writing the updated data to a new block identified by the same logical block address, this is not persuasive. First, it is noted that in allocating new memory for a write, Hasbun et al. teaches checking if there is enough space for the updated data to be written to the same block (column 17, lines 37-40). However Hasbun et al. also teaches storing to a different block if there is enough space in the current block, and this meets the claim limitations of writing to "one or more new blocks".

When a new version (i.e. updated) data is written to a new block (figure 9, after allocating a free physical sector in step 250), the sector header translation table is updated to point to the most recent version of the sector data associated with the sector number (where the sector number is the logical sector identifier received from CPU 52, which the CPU 52 believes corresponds to a physical sector; see column 5, lines 13-15). See column 17, lines 17-20. Therefore, the system updates the SHTT such that the input sector number from the CPU is associated with the new physical location of the most recent version of the data, i.e. the same sector number is used to point to the most recent version of the data, just the physical address changes in the SHTT.

Although Hasbun et al. may teach moving or copying blocks, within the teachings of Hasbun, when writing a sector to the FLASH memory, blocks not being written are not moved or copied (which is what Applicant has claimed). See column 16, line 59, to column 17, line 7.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2188

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

10. Any response to this final action should be mailed to:

Box AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

All "OFFICIAL" patent application related correspondence transmitted by FAX must be directed to the central FAX number at **(703) 872-9306**:

"INFORMAL" or "DRAFT" FAX communications may be sent to the Examiner at **(703) 746-5693**, only after approval by the Examiner.

Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA., Fourth Floor (receptionist).

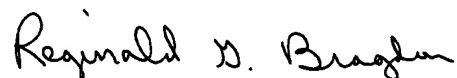
Art Unit: 2188

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reginald G. Bragdon whose telephone number is (703) 305-3823. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and every other Friday from 7:00 AM to 3:30 PM.

The examiner's supervisor, Mano Padmanabhan, can be reached at (703) 306-2903.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

RGB
June 25, 2004



Reginald G. Bragdon
Primary Patent Examiner
Art Unit 2188